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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,839	10/30/2003	Vivek Jairazbhoy	10541-1888	9281

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EXAMINER

MCKINNON, TERRELL L

ART UNIT PAPER NUMBER

3753

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,839

Applicant(s)

JAIRAZBHOY ET AL.

Examiner

Terrell L. Mckinnon

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-8 and 10-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8 and 10-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/30/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Response to Amendment

Receipt is acknowledged of applicant's amendment filed September 9, 2005. Claims 5 and 9 have been canceled without prejudice. Claims 1-4, 6-8, 10-21 are pending and an action on the merits is as follows.

Applicant's arguments with respect to claims 1-4, 6-8 and 10-21 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-8, 10 and 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhatti et al. (U.S. 6,424,531) in view of Ozmat (U.S. 6,196,307).

Bhatti discloses a heat sink comprising;

- A heat sink comprising a unitary body (column 7, lines 29-37) having first (20) and second (24) portions, the first portion being generally non-porous and the second portion being generally porous;
- the first portion transfers and spreads heat within the heat sink and the second portion substantially dissipates the heat from the heat sink;

Art Unit: 3753

- wherein the second portion has a melting temperature that is lower than a melting temperature of the first portion;
- the first and second portions are made of a metal material (column 7, lines 38-46);
- the first portion is solid and a method of making the porous heat sink (column 7, lines 47-59).

Bhatti's invention discloses all of the claimed limitations from above except for the first and second portions include a copper alloy; the semiconductor die is soldered to the non-porous portion of the unitary heat sink; the heat sink is made of a copper alloy; a gas is forced through the porous portion of the heat sink; and a liquid is forced through the porous portion of the heat sink.

3. However, Ozmat teaches a porous copper alloy heat sink (column 2, lines 21-52); the semiconductor die is soldered to the non-porous portion of the unitary heat sink; a gas is forced through the porous portion of the heat sink; and a liquid is forced through the porous portion of the heat sink (column 3, lines 29-37).

Given the teachings of Ozmat, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the porous heat sink of Bhatti with the first and second portions include a copper alloy; the semiconductor die is soldered to the non-porous portion of the unitary heat sink; the heat sink is made of a copper alloy; a gas is forced through the porous portion of the heat sink; and a liquid being forced through the porous portion of the heat sink.

Doing so would provide alternate materials for forming and attaching the porous heat sink to heat generating devices.

For the record, it is very well known in heat transfer applications that solid metal materials are a much better conductor of heat fluxes than porous conductors, do to there uniform (without being porous) nature. Which, is propositional to the melting temperature of metal conducting materials.

Response to Arguments

Applicant's arguments filed September 9, 2005 have been fully considered but they are moot in view of the newly cited references as stated above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 3753

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L. Mckinnon whose telephone number is 571-272-4797. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Blau can be reached on 571-272-4406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terrell L Mckinnon
Primary Examiner
Art Unit 3753
November 28, 2005